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DETERMINANTS OF OPTIMAL CAPITAL STRUCTURE: A COMPARISON
BETWEEN GERMAN AND TURKISH RETAIL COMPANIES

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OPTİMAL SERMAYE YAPISININ BELİRLEYİCİLERİ: ALMAN VE TÜRK
PERAKENDE ŞİRKETLERİNİN KARŞILAŞTIRILMASI

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TABLE OF CONTENTS

ACKNOWLEDGEMENTS.....	iii
LIST OF ABBREVIATIONS	vi
LIST OF TABLES	vii
ABSTRACT	viii
ÖZET.....	ix
INTRODUCTION.....	1
1. LITERATURE REVIEW.....	3
1.1. Overview: Modern Theories of Capital Structure.....	3
1.1.1. Modigliani and Miller Theory	3
1.1.1.1. MM Proportion I: No Taxes.....	4
1.1.1.2. MM Proportion II: The Effect of Corporate Taxes.....	4
1.1.2. Trade-Off Theory.....	5
1.1.2.1. Static Trade-Off Theory	6
1.1.2.2. Dynamic Trade-Off Theory	7
1.1.3. Pecking Order Theory	8
1.1.4. Signalling Theory	10
1.1.5. Market Timing Theory	11
1.1.6. Agency Theory	11
1.1.6.1. Underinvesting Problem	12
1.1.6.2. Risk-Shifting Problem	12
1.2. Previous Studies	12
1.2.1. Developed and Developing Countries	13
1.2.2. Germany and Turkey	14
1.2.3. Capital Structure Studies on Retail Industry	15
2. DATA AND METHODOLOGY	16
2.1. Sample and Data Collection	16
2.1.1. Firm-Specific Variables	17
2.1.2. Macroeconomic Variables	20
2.2. Methodology	21

3. EMPIRICAL RESEARCH AND FINDINGS	24
3.1.Descriptive Statistics and Correlation Matrix.....	24
3.2. Findings	25
3.2.1. Findings on Firm-Specific Variables	25
3.2.2. Findings on Macroeconomic Variables	27
CONCLUSION	29
REFERENCES	31
APPENDIX	41

LIST OF ABBREVIATIONS

BIST: Borsa İstanbul

EBITDA: Earning Before Interest, Tax, Depreciation and Amortization

Et al.: And Others

G-7: Group of Seven

ISE: Istanbul Stock Exchange

KAP: Kamuyu Aydınlatma Platformu

H: Hypothesis

LEV: Leverage

MM: Modigliani and Miller

OECD: The Organisation for Economic Co-operation and Development

OLS: Ordinary Least Square

PROF: Profitability

PV: Present Value

TANG: Tangibility

TDUM: Turkey Dummy

US: United States

LIST OF TABLES

Table 1: Calculation Method of the Variables.	17
Table 2: Descriptive Statistics for German Firms	41
Table 3: Descriptive Statistics for Turkish Firms.....	41
Table 4: Detailed Descriptive Statistics of German and Turkish Firms.....	42
Table 5: Correlation Matrix in German Firms.....	43
Table 6: Correlation Matrix in Turkish Firms	43
Table 7: Correlation Matrix for German and Turkish Firms.....	44
Table 8: OLS and Fixed Effect Regression Results in Turkish and German Firms.....	45
Table 9: One Regression Model Results with Turkey Dummy	46
Table 10: A Simple Summary About the Effect of The Variables on Total Leverage	47
Table 11: Detailed Formulas of Dependent and Independent Variables.....	48
Table 12: Listed Turkish Companies	49
Table 13: Listed German Companies.....	49

ABSTRACT

Optimal capital structure decisions on company balance sheets have an important place in financial and strategic planning of corporate companies. These decisions were examined in finance literature by different academic studies and thanks to the various capital structure theories, a rich literature came out. Capital structure theories analyzed the capital structure decisions of companies from a theoretical perspective and many academic studies investigated these theories with their methodologies and perspectives through the empirical research.

This study also aims to analyze the financial leverage determinants of publicly traded retail companies for one developed and one developing country both by testing respectively and by comparing the countries and to examine the compatibility of the results with the capital structure theories in the literature. For this analysis, four financial ratios of 11 Turkish and 10 German listed companies between 2007-2019 and inflation data of the relevant countries were chosen as independent variables and the effect of these variables on the firm's financial leverage as the dependent variable was tested with panel data method.

The results of the study showed that there is no evidence for the effects of each firm-specific variable and inflation on the firm's financial leverage in the retail industry, and that there is no evidence that firm-specific and macroeconomic variables differ significantly between countries, and additionally, there is no evidence of an overall compatibility with capital structure theories.

Keywords: Capital Structure, Financial Leverage, Firm-Specific Determinants, Macroeconomic Determinant, Panel Data Analysis

ÖZET

Kurumsal şirketlerinin finansal ve stratejik planlamalarında şirket bilançolarındaki optimal sermaye yapısı kararları önemli bir yer tutmaktadır. Bu kararlar, finans literatüründe farklı akademik çalışmalarla incelenmiş ve çeşitli sermaye yapısı teorileri ile zengin bir literatür oluşmuştur. Sermaye yapısı teorileri, işletmelerin sermaye yapısı kararlarını teorik perspektiften analiz etmiş ve birçok akademik çalışma, ampirik araştırmalar vasıtasıyla kendi metodolojileri ve perspektifleri doğrultusunda bu teorileri sorgulamıştır.

Bu çalışma da, seçili bir gelişmiş bir de gelişmekte olan ülkenin halka açık perakende şirketlerinin finansal kaldıraç belirleyicilerini hem ayrı ayrı hem de ülkeler arası karşılaştırma yaparak analiz etmeyi ve karşılaştırma sonuçlarının literatürdeki sermaye yapısı teorilerine uygunluğunu sorgulamayı amaçlamıştır. Bu analiz için 2007-2019 yılları arasında 11 Türk ve 10 Alman firmanın dört adet finansal rasyosu ve ilgili ülkelerin enflasyon verisi bağımsız değişken olarak alınmış ve bu değişkenlerin firma finansal kaldıraç bağımlı değişkenine etkisi panel data yöntemiyle test edilmiştir.

Çalışma sonuçları, perakende sektöründe ayrı ayrı herbir firmaya özgü değişkenin ve enflasyonun firma finansal kaldıraçına etkisi üzerine bir kanıtın tespit edilemediğini ve firmaya özgü ve makro ekonomik değişkenlerin ülkeler arasında anlamlı bir şekilde farklılaşmadığını göstermiş ve aynı zamanda sermaye yapısı teorileri ile bütüncül bir uyum gösteren kanıtın bulunamadığını ortaya koymuştur.

Anahtar Kelimeler: Sermaye Yapısı, Finansal Kaldıraç, Firmaya Özgü Belirleyiciler, Makroekonomik Belirleyici, Panel Data Analizi

INTRODUCTION

Capital structure decision is one of the most important issues in finance literature around the world. Modern theories in the literature has arisen with an important question mark: how to determine the capital structure of the company and which level is the optimum of the capital structure that is an equilibrium of debt and equity. This level refers that the weighted average cost of capital (WACC) is the possible lowest level and thus maximizes firm value.

Formerly, this subject was a controversial issue until the first capital structure theory of Modigliani and Miller in 1958. After this first theory, the theories of modern capital structure started arising in the finance literature. Many empirical studies started taking place in the literature with the rising of these theories. These theories measured the financial ratios (debt to equity ratio) of companies with empirical data and they investigated the relationship with modern theories. This study also aims to investigate the current approaches with a new empirical measurement and contribute to the finance literature.

Many studies have addressed this issue from different points. Empirical researches have mainly studied the impact of firm-specific variables on financial leverage. However, this study aims to measure the effect of country-specific variable as well. To measure this effect, it aims to make a comparison between developed and developing countries by selecting two specific countries as developed and developing countries. Although there are some empirical studies in the literature that make country-based comparisons using both firm-specific and country-specific variables, we see that no studies are comparing only by choosing two specific countries. The reason for using country-specific variables besides firm-specific variables and in addition to comparing these variables between the two countries is to measure the direction and strength of the effects of the variables in different countries. For this, two countries developed and developed have been chosen so that which results can be seen in two countries with different macroeconomic conditions.

In particular, it can be said that the studies that have been carried out about Turkey are quite a few. Thus, it is important to measure both inflation and firm-specific impacts in a country that has higher inflation like Turkey. Besides, it is valuable to make this comparison with Germany which is considered a developed country.

Besides, the study focused on retail by selecting a single sector. Retail industry (as it will be explained in the retail industry section) has relatively more visible financial data in their statements to analyse. In this respect, it was thought that they have appropriate empirical data to investigate. Additionally, I believe that empirical research about the retail sector of these specific countries provides a significant contribution to the literature.

In this context, modern capital structure theories will be explained in the second part. There are 6 major theories. The first one, capital structure theory of Modigliani and Miller will be explained and then the trade-off theory and pecking order theory will be explained. Since these two approaches take more place in the finance literature, the results will be evaluated predominantly through these two approaches. In the continuation of the second part, the similar examples in the literature of the empirical research mentioned above will be examined. In the first part of it, researches in developed and developing countries will be examined. It will be investigated whether there is a difference regarding the determinant of financial leverage between the researches. Then, it will be mentioned about researches that focus on Turkish and German firms and their results. Finally, studies in the context of the retail sector will be examined.

In the third section, data selection and methodology will be explained and in the fourth section, empirical research and its findings will be included. It will be clarified which theoretical assumptions empirical researches and their findings fit to. In this section, these findings will be interpreted. It will be clarified the impact of the determinants between Germany and Turkey. Additionally, it will be shown whether there is a significant difference between the determinants of capital structure in Turkish and German companies. Consequently, the result of the empirical research will be summarized and concluded in the last section.

1. LITERATURE REVIEW

1.1. Overview: Modern Theories of Capital Structure

One of the most critical questions in the corporate finance literature is to choose the capital structure of companies. Until the end of the 1950s, there was not a major theory of capital structure. The traditional approaches was mostly dominating. These approaches suggest an optimal capital structure of debt and equity. Increasing debt level in capital structure leads to decrease the WACC since debt is relatively cheaper. Thus, discounted future cash flow to debt and equity increases the firm value.

After traditional approaches, the first modern theory arose with capital structure theory of Modigliani and Miller.¹ In the next part, the main modern theories that first time came out with Modigliani and Miller (MM) will be described.

1.1.1. Modigliani-Miller Theory

Franco Modigliani and Merton Miller (MM) had enormous impacts in the finance literature and capital structure theory in 1958 with their article “The cost of capital, corporate finance and the theory of investment”. They supposed a perfect capital market, where there are no taxes, transaction costs. They argued that the firm’s value is independent of its capital structure in this form of the market. Theoristians showed that the firm’s value does not depend on how the firm is financing. Alternately, the value of the company is the present value of the future cash flows which is generated from its assets. Later, Modigliani and Miller added taxes into their argument. This splits their theory two main proportion: Proportion I and Proportion II.

¹ Theory of Modigliani and Miller will be signified with the abbreviation of “MM” in this study.

1.1.1.1. MM Proportion I: No Taxes

According to the proposition of no taxes or irrelevant proposition, the value of the leveraged company is the same as that of the unleveraged company in a perfect financial market. The impact of leverage on the company value was controversial before MM. But MM argued that the investors have to borrow from their accounts to buy shares of an unleveraged company when the value of the leveraged companies are overvalued

Their assumptions basically depend on the following arguments: ²

- “Frictionless markets: No transaction costs, etc.
- Competitive markets: Individuals and firms are price-takers.
- Individuals and firms can undertake financial transactions at the same price (e.g., borrow at the same rate).
- All agents have the same information.
- No taxes.
- A firm’s cash flows do not depend on its financial policy”

1.1.1.2. MM Proportion II: The Effect of Corporate Taxes

Modigliani and Miller showed with their second proportion by adding taxes to their theory that the cost of equity of a company increases with its leverage ratio. They recognized tax-deductibility of using debt. It means that companies can show their interest payments regarding the debt in their capital structure as an expense and this reduces their tax payment. Thus, companies which have higher debt level are able to deduct the interest of the debt from the tax according to MM Theory in 1958. This leads that the leveraged companies have a higher total value than the unleveraged companies that have only equity in their capital structure.

² http://faculty.haas.berkeley.edu/parlour/teaching/corp_intro.pdf

Firms are able to deduct interest payments as an expense with the tax advantage, on the other hand, dividends paid to shareholders are deductible. Therefore, companies often prefer to increase debt level in the capital structure to reduce their tax payments thanks to tax deduction of the interest on the debt.

However, since the MM's initial capital structure theory did not consider the factor of the bankruptcy costs and other nonefficient market costs. After the lack of these viewpoints, new modern capital structure theories based on the MM have arisen. The main theories of these in the finance literature are Trade-off and pecking order. In the next section, these two perspectives and other essential theories will be explained.

1.1.2. Trade-Off Theory

There are two main trade-off theories: The static trade-off theory and the dynamic trade-off theory. The static trade-off theory is a first standard model of the trade-off theory that is a financial theory based on the MM Theory which claims that companies specify their capital structures when the benefit of tax shield from debt and bankruptcy costs are in balance. There is a trade-off between the tax advantage of debt and bankruptcy costs (or financial distress) in the optimization of the financial structure of companies has a trade-off (Kraus and Litzenberger, 1973). In addition to the static trade-off theory, there is also a dynamic trade-off theory. This version of the theory argues that the target level of leverage changes over time depending on the firm types and market conditions (Fischer et al., 1989)

The trade-off theory also predicts that there is a significant moderate indebtedness for taxpayers. It estimates that target debt ratios change through company to company. The theory argues that firms with higher tangible assets for being shielded have a higher leverage ratio than firms with relatively higher intangible assets.

The risky firms with less profit and relatively higher intangible assets tend to be financed with equity (Myers, 2001).

For instance, the high-tech growth companies have mostly intangible assets and thus, they are relatively risky than the companies in most of the other sector. This causes that they have a lower leverage ratio.

On the other hand, utility and retail industry which I research on have higher leverage, since they are more tangible and shown as comparatively safe. However, the trade-off theory does not have a wide argument on why most of the successful companies have lower leverage.

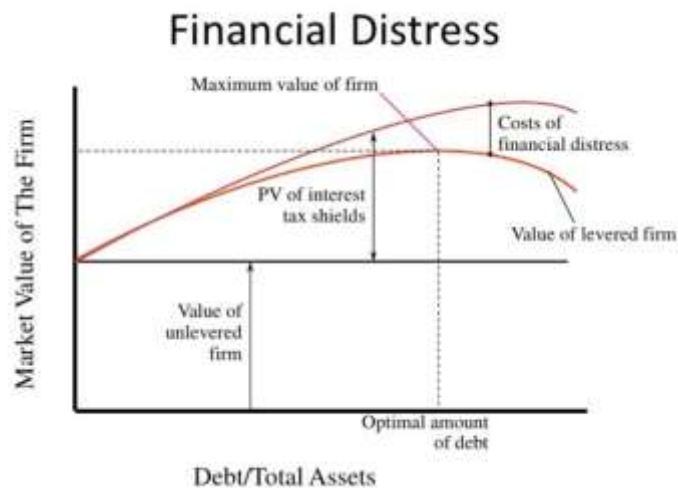
Otherwise, the theory assumes that companies with higher profits are able to lend easily and they have more taxable income to be shielded and higher debt ratio in their capital structure, however, Myers (2001) and Brealey et al. (2009) show that most of the successful companies have low debt ratios.

In the following parts, we will look into these versions of the trade-off theory in detail.

1.1.2.1. Static Trade-Off Theory

The static trade-off theory assumes that companies have an optimal capital structure and this is decided with the trade-off between the costs and the benefits of debt and equity in the capital structure. The use of debt has some benefits: One of them is the advantage of the tax benefits of debt. On the other hand, it has also some disadvantages as debt is a cost of potential bankruptcy (or financial distress), in particular when the firm uses higher debt and thus, a trade-off arises between the tax advantage and the disadvantage of bankruptcy.

Figure 1.1.2.1: Market Value of the Firm in Trade-Off Theory ³



The figure shows that there is a trade-off between PV (Present Value) of interest tax shields and the cost of financial distress (bankruptcy). An increase in debt/total assets ratio leads to an optimal capital structure. The difference between the top and bottom curve is financial distress and bottom curve gives the firm value in the specific debt level.

1.1.2.2. Dynamic Trade-Off Theory

The dynamic trade-off theory, in contrary with the static trade-off theory, shows that companies can deviate their target capital structure. These model of the trade-off theory emphasize that companies have a target to maximize its value and it is costly when they deviate from their target. Thus, deviations will be gradually eliminated over time. In the approach of the dynamic trade-off, optimal capital structure decision of companies depends on their gross margin of investment projects which is determined by companies in the following period and they can

³ Addae, A. A., Nyarko-Baasi, M., & Hughes, D. (2013). The effects of capital structure on profitability of listed firms in Ghana. *European Journal of Business and Management*, 5(31), 215-229.

also expect to increase their funds in that time period. If funds are to be raised, they prefer debt or equity in their capital structures. A company combine these actions.

The first dynamic trade-off argument belongs to Kane et al. (1984) and Brennan and Schwartz (1984). They emphasize a trade-off between the tax advantage and bankruptcy cost. According to them, companies are able to keep higher debt ratio to take advantage of the tax savings as they reverse shocks by rebalancing costlessly.

The studies on dynamic trade-off models are quite new and therefore any judgements on their results are tentative.

1.1.3. Pecking Order Theory (Information Costs Theories)

The Pecking Order Theory argues that a company determine their capital structure depending a “pecking order” which names the theory. (Myers and Majluf, 1984; Myers, 1984).

The theory says that debt financing of a company is more costly than equity capital on account of the information asymmetry between related company and investors. According to main assumptions of the theory, firm’s executives have always preferable information regarding with the value of the company than the investors. According to Myers and Majluf (1984), firm’s equity is determined with mispricing in the marketplace due to information asymmetry and this leads to loss of wealth for the shareholders.

Myers and Majluf (1984) argues that the equities of the company will be under-priced if the company funds its investment with equity financing, since executives are not able to persuade the investors about the quality of their assets and potential investment. Consequently, investors interpret the decision of company about issuing of new securities and this is a sign of a potential bad news and according to this, they price new securities.

Consequently, the assumptions of the pecking order theory are based on the information cost and signalling effect. It states respectively below assumptions:

1. Firstly, companies should prefer to finance itself internally through its retained earnings,
2. If there is not an sufficient source for financing, then they should finance themself with debt.
3. Finally, companies should finance themself with the issuing of the equity.

The importance of the pecking order is that the above form signals to the public about the performance of the company. If a company finances itself internally, that means this firm has a strong financial structure. If a company finances itself through debt, it signals that management has confidence that the company can easily handle their obligations. If a company finances itself with issuing new securities, it can mean that the company evaluates that its security is overvalued and it wants to issue its securites before price of securities fall and this is a negative signal for the public.

According to the theory, the firms do not have a target debt ratio since they do not need a debt financing. Less profitable companies need to issue debt since these companies do not have sufficient internal funds to finance themselves, thus debt is firstly for external financing in this approach. (Myers, 2001; Brealey et al., 2009).

There are empirical reasearches on the pecking order theory in the literature that gives empirical evidences about it.

Taggart Jr. (1985), Baskin (1989) and Allen (1993) tests the pecking order theory and they find the evidence about the theory. Taggart Jr. (1985) examines the US companies. He finds that companies firstly prefer internal financing when they need a new investment. He also shows that companies secondly turn to debt financing if they do not have available internal sources. Baskin (1989) also provides an evidence. They argue that pecking order theory explains the behavioural finance in the United States. Allen (1993) tests the australian companies and Allen (1993) finds a significant negative relationship between profitability and leverage since profitable companies tend to fund with internal borrowing.

The argument of the pecking order theory is mainly based on the financial behaviour. In relation to the pecking order theory, signalling theory is mostly focuses on financial behaviour and tries to explain from this perspective.

1.1.4. Signalling Theory

The signalling theory is firstly formed by Ross (1977). The theory basicly depends on the argument of the information asymmetry between firm management and shareholders. According to the theory, capital structure decision of a company signals an information to the market. For instance,

If executives believe that their firms are undervalued, this will lead:

1. The firm will firstly lend and
2. Then, as the last solution, they issue equity.

On the other hand, if firm's executives predict that their firm is overvalued, they prefer to issue the security in the first step.

Signalling theory empasizes a difference between high-quality and low-quality companies. The theory argues that a high-quality company can distinguish itself from a low-quality company by sending a credible signal about its value to the market. High-quality companies are more transparent and they are open to be investigated by the market, however low-quality companies are not relatively willing to be discovered.

This leads that signaling of higher debt by executives shows an optimistic future and high-quality companies use more debt. In contrast to this, low quality companies have lower debt to equity ratio. Thus, it is considered that these signals based on this argument are crucial in a nonefficient market with the asymmetric information between management and investors (Spence, 1973)

Ravid and Sarig (1991) tested the theory and they found there is a positiv relationship between high-quality companies and their leverage ratios. This result is also similarly found by Aharony and Swary (1980) and Masulis (1980).

1.1.5. Market Timing Theory

Market timing theory is an extended version of the signalling theory. The theory argues that firm's executives funds themselves through equity financing if they predict that their company is overvalued at that time. On the other hand, they prefer to use debt when they think that their firm is undervalued. This argument is based on an assumption which says that executives have always better information than the market as signalling theory argues.

According to Baker and Wurgler (2002), companies issue securities at high prices and then repurchase them at low prices as an equity market timing. MM (1958) also shows that in an efficient capital markets, the costs of capital do not change independently, thus there is not a specific benefit from the capital structure. In contrast, in an inefficient capital market, market timing causes the expense of entering and exiting into the market for the shareholders.

According to the market timing argument of Al-Tally (2014), executives prefer to issue equity when they believe that their firm is overvalued in the market. The study of Al-tally (2014) found that the companies with low leverage finance with debt when their firm's value in the market is high, otherwise, the companies with high leverage ratio finance when their firm's value are low.

1.1.6. Agency Theory

The agency theory is based on the agency conflicts. According to the theory, there is an asymmetric information between firm's executives, owners and shareholders. This conflict effects their capital structure. The interest of the executives and the owners can be different although the executives of a company are the agent of the owners of the company in substance. Due to their interest, the executives can also tend to make over-investing to the projects with negative net present value that can lead a cost for owners. This refers to over-investing problem. in Jensen (1986). They argue that these potential problems can be reduced by increasing leverage since the interest payments decrease the cash flow to use. Besides, as bondholders monitor

such firms more closely, executives of high-leverage firms will be able to misuse their position. The agency theory demonstrates two different issues: Underinvestment Problem and risk-shifting problem.

1.1.6.1. Underinvesting Problem

The agency conflict between borrowers and owners come out when a firm with high leverage ratio misses the potential suitable investment opportunities on account of their income distribution plan to the borrowes (Myers, 1977).

1.1.6.2. Risk-Shifting Problem

Jensen and Meckling (1976) argue that another conflict may occur between owners and borrowers when an investment project has higher return than the cost of debt. Thus, the company owners gain and borrowers are exposed to a higher risk for the possible losses as the owner have a limited liability.

1.2. Previous Studies

In light of the capital structure theories summarized above, many empirical studies have arisen. These studies addressed the issue of capital structure with different scopes and directions.

This study focuses on three main arguments to build up its research:

- Modern theories of capital structure mainly focus on firm-specific factors, whereas there are several macroeconomic factors to affect to firm leverage.
- To examine this assumption, the study compares two countries.
- The study also adds a macro-economic explanatory to measure it.

Based on these arguments, the research differentiates from other studies with three factors listed below:

1. To compare the capital structure determinants between developed and developing countries,

2. To focus only on two specified countries. These countries are Turkey and Germany,
3. To focus only on the retail sector of these countries.

In this section, we will examine the reasons for choosing these three main issues and previous studies on these issues.

1.2.1. Developed and Developing Countries

This study examines whether or not corporate finance leverage explanatory factors differ significantly between developed and developing countries?

Most of empirical studies regarding with financial leverage tested USA companies. (Titman and Wessels, 1988; Pozdena, 1987; Taggart Jr, 1985 and Bradley et al., 1984;).

One of the most important studies belong to Booth et al. (2001). They show that the variables of capital structure decision of a company in a developing country are same as in a developed country. After the mid-1990's, the amount of the empirical researches which study developing countries started increasing. For instance, Espinosa et al. (2012), Huang and Song (2006) for China and Wiwattanakantang (1999) for Thailand find a result which supports the trade-off theory. On the other hand, the results of the researches of Qureshi (2009) for Pakistan, Correa et al. (2007) for Brazil, Korkmaz et al. (2007) for Turkey, Pandey (2004) for Malaysia support the pecking order theory.

Rajan and Zingales (1995) picks four key independent variables (which are profitability, logarithm of sales, market to book ratio, tangibility) to test the determinants of capital structures of the companies of G-7 countries (United States, Germany, Canada, Italy, Japan and the United Kingdom). They find that these factors are correlated in the United States and other G-7 countries.

Demirguc-Kunt and Maksimovic (1999) shows in their studies that the developing countries have fairly lower long-term debt than the developed countries.

La Porte et al. (1998). Without focusing on the question whether the Trade-off theory is superior over the pecking-order theory or visa verse, La Porte et al. concentrated on legal rules and institutions in different countries.

1.2.2. Germany and Turkey

This study focuses on a developed and a developing country. The developed country that I pick to analyse is Germany since this country has the largest economy in the EU (European Union) and they belong to the G-7.⁴

The developing country that we have chosen is Turkey. Turkey takes part between Newly Industrialized Economies. Second reason is that there is only a few studies about capital structure of Turkish firms.

As mentioned above, there are several studies about Capital Structure of German and Turkish companies. Regardless of determinants of capital structure, Hönig (2011) tests the taxation impact on the financial leverage for German companies.

An early reserch of Albach (1975) investigates the development of the capital and financial structure of German firms by means of different indices.

As for Turkish firms, Teker (2009) works with 42 selected companies traded at the ISE (Istanbul Stock Exchange) 100 index. In order to find impact of several determinants such as tangibility, size, growth opportunities, profitability and nondebt tax shields on its long-term financing.

Karadeniz and et al. (2009) reseachs the factors that effects the capital structure decisions of the companies in ISE in the scope of the pecking order and the trade-off theories.

Köksal and Osman (2014) test different type of companies such as manufacturing, non-manufacturing, publicly traded, private, small and large companies in Turkey in basis on the pecking order and trade-off theories. They find that the trade-off

⁴ Group of seven major advanced economies in the world

theory explains better the capital structures of all sectors and all company models than the pecking order theory.

1.2.3. Capital Structures Studies on Retail Industry

This study examines comparison of capital structure determinants in the developed and developing countries only in scope of one sector: Retail. It is advantageous to study in retail sector since financial statement data of companies in the retail sector like assets, liabilities in balance sheet and income in profit and loss statement are more visible to investigate and there is relatively less controversial regarding their firm value than other industries like service or manufacturing industries. This industry seems also relatively suitable for comparison between firms.

Studies on capital structure in the retail industry is mainly about UK companies. Abdou, Kuzmic Pointon and Lister (2012) studies determinants of capital structure for retail companies in the UK. They investigate and focus on some financial determinants like asset growth, asset structure, tax shields, growth opportunities, operating profitability, liquidity, business risk, sales growth and size.

Robert and Hunter (1995) also have a study which examines the capital structure decision of companies in the retail sector of the UK.

2. DATA AND METHODOLOGY

2.1. Sample and Data Collection

The sample of the study includes the data of 11 Turkish firms⁵ taken from Borsa Istanbul and 10 firms taken from Xetra. The analysis is based on year-end observations from 2007 to 2019.⁶

Data obtained from the first published year of the firms which do not have data until 2006.

11 firms whose sector was classified as retail by Kamuyu Aydınlatma Platformu (KAP) were selected as the sample of Turkish firms. 10 German firms were randomly selected from the firms that seem in the retail category in the Capital IQ system.

One dependent variable and 5 independent variables were used in the study. The dependent variable is leverage. 4 of 5 independent are firm variables which are Profitability, Growth, Firm Size and Tangibility. The last one selected is inflation which defines as a macroeconomic variable.

Three main financial statements (which are balance sheet, profit and loss table and cash flow statements) were used to calculate firm-specific variables. All company data was obtained from Capital IQ.⁷

Inflation data used as macroeconomic data is taken from OECD data.⁸

⁵ According to KAP (Kamuyu Aydınlatma Platformu) there are 11 company classified as retail company in Borsa İstanbul. Milpa Ticari ve Sınai Ürünler Pazarlama Sanayi ve Ticaret A.Ş. (MIPAZ) is excluded as the company has a outlier in profitability variable.

⁶ For firms with special financial calendars, the statements of the month specified as year-end are used.

⁷ Capital IQ is available for the company I work for. It is used courtesy of the company.

⁸ <https://data.oecd.org/price/inflation-cpi.htm>

2.1.1. Firm-Specific Variables

Rajan and Zingales (1995) argue four variables to effect on leverage: Profitability, firm size, tangibility and market-to-book ratio shows consistently the highest correlation with leverage. Afterwards, this argument is strengthened by Frank and Goyal (2009).

Besides this, some major studies showed that four firm-specific variables which are employed in this study (profitability, firm size, growth and tangibility) are the best determinant to the leverage according to the reseach of Handoo and Sharma (2014), Chakraborty (2010), Deesomsak et al. (2004), Booth et al. (2001), Wald (1999), Michaelas et al. (1999) and Titman and Wessels (1988).

Due to these major studies, the following firm-specific explanatories was determined:

- Profitability
- Firm Size
- Growth
- Tangibility

Table 1. Calculation method of the variables.

Variables	Formulas
Total Leverage	Total Dept / Total Assets
Profitability	EBITDA / Net Sales
Firm size	Natural Logaritism of Net Sales
Growth	Net Sales: (t2-t1)/t1
Tangibility	(Total Asset - Current Asset) / Total Assets
Inflation	Annual CPI

Table 1 shows that the calculation based on methods that will be explained in the following part.

Leverage

In this study, financial leverage is the dependent variable. In the literature, there are several definitions of financial leverage which were used to investigate its relation with firm-specific characteristics.

Financial leverage implies total debt to total asset ratio. The study focuses on the total debt ratio without focusing on the long or short-term debt ratio. The total debt ratio is measured as the book value of total debt to total assets. This calculation method is also used by Rajan and Sbeiti (2010), Leary and Roberts (2005) and Zingales (1995).

The leverage ratio is measured as follows:

$$\text{Leverage} = \frac{\text{Total Debt}}{\text{Total Assets}} \quad (1)$$

Profitability

According to the trade-off theory, the more profitable a firm is, the less concerned with bankruptcy and the more it takes advantage of the tax shield through debt (Frank & Goyal, 2009). Additionally, due to the larger free cash flow, it will be more advantageous to take on debt for profitable firms, as they are more likely to possess agency cost concerns (Jensen, 1986). On the other hand, the pecking order theory assumes that more profitable firms have easier access to internal funds and thus, they should use less leverage. Nonetheless, Frank and Goyal (2009) and Rajan and Zingales (1995) show in their studies that a negative relationship between profitability and leverage. According to the research of Rajan and Zingales (1995), profitability is obtained by dividing EBITDA to total assets.

$$\text{Profitability} = \frac{\text{EBITDA}}{\text{Net Sales}} \quad (2)$$

Firm Size

The firm size is measured as the natural logarithm of net sales. This is also measured by the studies of De Jong et al. (2008) and Drobetz et al. (2006).

$$\ln(\text{net sales}) \quad (3)$$

Larger firms have fewer problems related to bankruptcy risk. Older and larger firms are in general more established and better known in the debt market and thus, they are less subject to agency costs. This implies that firm size should be positively correlated with debt (Frank and Goyal, 2009). Pecking order theory argues that size is related to firm age, and older firms are able to easier access to retained earnings. Frank and Goyal (2003) and Rajan and Zingales (1995) show a positive relationship between size and leverage. Nevertheless, larger firms, in general, have better access to the capital markets and thus, they have alternate ways of financing which can adversely affect the degree of debt financing. In the scope of the trade-off theory, Jõeveer (2013) argued that larger firms with more tangible assets and high profitability should have more advantageous to have larger tax benefits of debt which result in a corresponding increase in the degree of debt financing.

Tangibility

According to the trade-off theory, there is a positive relation between tangibility and leverage since tangible assets are relatively more secure and the companies with higher tangibility are less likely to face financial distress. On the other hand, the pecking order theory argues that there is a negative relationship between these ratios since issuing of securities is less costly thanks to the low information asymmetry intangible assets (Harris and Raviv, 1991).

Many empirical studies such as Rajan and Zingales (1995) and Demirgüç-Kunt and Maksimovic (1999) find contrarily a positive relation between tangibility and leverage.

In this study, tangibility is calculated by dividing fixed assets to total assets.

$$\text{Tangibility} = \frac{\text{Fix Assets}}{\text{Total Assets}} \quad (4)$$

Growth

Trade-off theory argues a negative relationship between firm growth and leverage. The fact that the growth firms' assets are intangible shows that these companies relatively more tends to the financial distress. On the contrary, the pecking order theory assumes a positive relationship between growth and leverage since high growth companies can not fund themselves sufficiently with equity in their investment projects and they demand the external debt. Besides this, most of the empirical studies show a negative relationship between growth and leverage.

Growth is calculated, in this study, with the percentage change in sales as in Frank and Goyal (2009) and Schoubben and Van Hulle (2004).

$$\text{Growth} = \frac{\text{Sales } t2}{\text{Sales } t1} - 1 \quad (5)$$

2.1.2. Macroeconomic Variables

In this study, the inflation rate is calculated with the annual inflation rate for each country as in the study of Booth et al. (2001).

Inflation is one of the most important macroeconomic indicator about the economic condition of a country. Besides the general impact of the inflation in an economy, inflation affects the decision of companies regarding with their capital structure and investment policies. For instance, Taggart Jr. (1985) says that the cost of borrowing regarding the interest rate is the most important issue in the economic decisions.

Many studies measured this impact on the capital structure. Chen and Boness (1975) argue that in an inflationist condition, the cost of capital increases and this leads to a decrease of the investments. This also reduces the growth opportunities of the company.

Another argument of Hatzinikolaou et al. (2002) says inflation causes the increasing of business risk and this makes tax shields more uncertain. Thus, the benefit of external financing decreases. They also argue that expected cash flow in the investment projects becomes more uncertain due to the inflation.

Moreover, inflation affects the interest rates of an economy. Due to the uncertainty of interest rate, inflation reduces not only debt financing regarding with their investment, but it can also reduce internal financing. In order to compensate for this risk, an additional risk premium can be added to the debt cost. As a result, the cost of debt will be higher, thus it reduces the debt financing of firms. This shows that higher inflation causes the firm to use less debt according to many researches.

On the contrary, The trade-off theory says that inflation has a positive impact on the capital structure due to the tax shield of the debt. According to the theory, inflation causes higher interest rate and higher interest rates expose higher cost of interest payment that can be shielded. Due to the tax shield on interest payment, companies tend to borrow more when inflation increases.

2.2. Methodology

This section of the study will explain the methods employed to investigate the relationship between the firm and macroeconomic specific determinants and capital structure. The sample contains data across firms and over time and panel data is more proper method for this, this method is employed. The regression analysis is a common approach to deal with one dependent and multiple independent variables. (Montgomery et al. 2012).

Eviews was used to run regression models. Two different method for the regression examined: OLS ve fixed effect regression. The fixed effect regression model is mostly employed in researches which test the determinants of the capital structure like in Degryse et al (2012), Shah and Khan (2007), Chen (2004), Drobetz and Fix (2003), Booth et al., (2001).

According to Wooldridge (2010), OLS should be employed if different samples for each period of the panel data is selected. Otherwise, fixed effects will be better if the same sample of firms/country/etc. is selected. Adjusted R-squared of the OLS models are lower than adjusted R-squared of fixed effects when comparing in Table 8 and Table 9. These tables show that adjusted R-squared values of the regressions of the fixed effects are higher in each table.⁹ Thus, the results of the fixed-effects model will be mostly analysed in the study.

The regression model was run with two different methods. In the first model, regression is examined for each country separately. In this study, the regression of Turkey and German firms were run as follows:

$$LEVi,t = \beta_0 i,t + \beta_1 PROFi,t + \beta_2 SIZEi,t + \beta_3 GROWTHi,t + \beta_4 TANGi,t + \beta_5 INFc,t + \epsilon_{i,t} \quad (6)$$

Where;

LEV: Leverage

PROF: Profitability

SIZE: Logarithm of Sales of Firm

GROWTH: Yearly increasing of the firm

TANG: Tangibility

INFLATION: Yearly Inflation Rate

β : Regression Coefficient,

e: Error Term,

i: Number of Firms,

t: Number of Years

c: Country

⁹ In a general aspect, the higher the adjusted R-squared, the better fits the data

As another method, observations of both countries were used in a model to run within one single regression model. This model was created using a dummy. A “Turkey Dummy” was used for Turkey data. The related model is as follows:

$$\begin{aligned}
 LEV_{i,t} = & \beta_0 i,t + \beta_1 PROF_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 GROW_{i,t} + \beta_4 TANG_{i,t} + \beta_5 INFL_{c,t} + \\
 & \beta_6 TDUM_i + \beta_7 TDUM_i * PROF_{i,t} + \beta_8 TDUM_i * SIZE_{i,t} + \beta_9 TDUM_i * GROW_{i,t} \quad (7) \\
 & + \beta_{10} TDUM_i * TANG_{i,t} + \beta_{11} TDUM_i * INFL_{c,t} + \varepsilon_{i,t}
 \end{aligned}$$

Dummy which means Turkey Dummy in this study is formulated as follows:

TDUM is 1 if firm is in Turkey

TDUM is 0 if firm is in Germany

3. EMPIRICAL RESEARCH AND ANALYSIS

This chapter includes the explanations of three main analyses which are descriptive statistics, correlation matrix and regression.

3.1. Descriptive Statistics and Correlation Matrix

The summarizing statistics of dependent and independent variables, including mean, standard error, median, standard deviation, sample variance, kurtosis, skewness, range, minimum, maximum, sum and count are reported in Table 4 that presents detailed descriptive statistics for German and Turkey Firms. In this part of the study mean, median, standard deviation, maximum and minimum will be mostly focused on. In addition to variables that are used in the regression model, financial data such as total debt, EBITDA and net sales which are used when calculating variables are included in the descriptive statistics.

Descriptive statistics are examined separately for data of Turkish and German firms.

There are 84 observations in Turkey. These observations are formed from 10 public companies. Otherwise, Germany has 86 observation with 10 public companies. There is an observation difference since observation numbers of the companies are not the same as the first year of public data of companies differentiates.

Table 2 depicts that there are similar mean and standard deviation for each country when comparing. There is an exceptional item: Inflation. Inflation means for countries are significantly different as Turkey have obviously higher inflation rates than Germany.

We ran a correlation matrix for each country observations separately. For our regressions, we ran a correlation matrix on the coefficients to look for collinearity and multicollinearity. Coefficients that are higher or less than 0.8 indicate a near multicollinearity problem. On the other hand, coefficients that are equal to 1

indicate a perfect multicollinearity problem. In the scope of these criteria, none of the variables showed any signs of either collinearity or multicollinearity.

3.2. Findings

In this study, I run two regression models which are OLS and fixed effects in order to determine the impact of the variables on the leverage.

In order to compare the power of the determinants of the countries for listed German and Turkish firms, a fixed-effect regression with country dummies have been employed. However, OLS results will also be interpreted and compared beside the fixed effect results.

Regression was run separately with Turkey and Germany data as OLS and fixed effect. Table 8 presents these results. In addition, regressions were run with Turkey Dummy as OLS and fixed effect. Table 9 presents the results of these regressions.

3.2.1. Findings on Firm-Specific Variables

Table 10 shows that a simple and rough presentation of the relationship between independent variables and leverage for Turkey and Germany. The last columns also present whether there is a significant difference in the power of the variable to the leverage between countries.

Profitability does not have a significant relationship with leverage in both countries. Otherwise, coefficient value of Turkey is -1,2945 when that value of Germany is 0,0954. Thus, it is seen that profitability in Turkey effects on the leverage negatively with a low significant value in comparison with Germany. Unlike classical theories and many studies, the results does not give a strong evidence about the relationship. However, OLS result shows that effect of the profitability on leverage is not significant whereas it is highly significant in Germany. In German firms, the 1-unit increase in profitability changes the leverage to 0.9765 negatively. Likewise, when comparing the two countries in Table 9 in fixed effect, it can be shown that the

effect of profitability on leverage is more significant, which is between 5% and 10%, than in Turkey. This is compatible with Pecking Order Theory and many research results. Consequently, our findings show that profitability has not significantly negative effect on the leverage in both countries.

Firm Size has significant, but a weak correlation in Germany. Its coefficient value is -0,1259. Contrary, there is not a relationship between firm size and leverage in Turkey. Additionally, in Table 9 it is seen that the firm size variable of Germany has not statistically significant effect to leverage in comparison with Turkish firms. OLS results are similar to fixed effects. Firm size variable in Germany has a positive correlation and in Turkey, there is not a significant effect on the leverage as a result of OLS. On the other hand, OLS result shows in Table 9 that effect of firm size is a significant difference in comparison to Turkish firms. However, its coefficient is too low which is 0,0380. Since significance degree is weak for both countries, we cannot reach a clear judgment. Previous research mainly find a positive relationship. But our findings confirm trade-off theory which assumes that there is a negative relationship between firm size and leverage in Germany.

Tangibility shows an interesting result. In both counties, there is a statistically significant relationship between tangibility and leverage. However, this relationship is negative in Turkey (coefficient: -0,6948), while it is moderate positive in Germany (coefficient: 0,5218). In Table 9, it can be seen that the relationship is significantly negative in Turkey when comparing two countries. This shows that Germany result is closer to the assumption of the trade-off theory. In other words, as tangibility increases, the company is considered more reliable and this increases its leverage. However, in Turkey firms mainly prefer internal borrowing. OLS has also similar results. Since tangibility variable does not affect in both country positively on the leverage.

Many studies argue that tangibility has a positive relation with leverage since higher tangible assets reduce financial distress. The results of Germany fit this argument. In contrast to trade-off and any other assumptions, the pecking order theory says that there is a negative relationship between these determinants like the result of

Turkey. However, it can not be clearly said that this negative relationship is due to the arguments of pecking order theory. It is also possible that assets cannot convey a positive sign to the market enough as much as it occurs in Germany.

Growth does not have a relationship in both countries. We cannot find a significant relationship in the comparison between countries. Unlike many empirical studies, our test results do not give an evidence about the relationship between growth and leverage.

Overall findings indicate that some variables have different effects on the leverage between Turkey and Germany. For instance, profitability and tangibility effect on the leverage in different ways in the two countries. Particularly, it can be said that tangibility has significantly different effects on leverage in both countries. Thus, it can be said that all firm-specific variables do not work in the same direction in every country. On the other hand,

In general, many of the theories described above emphasized that variables had a significant effect on leverage. However, the empirical test results do not give an evidence to determine for effect of other variables on leverage. On the other hand, firm-specific variables do not have the same effect when compared by country. This leads us to the assumption that country-specific variables can result in different effects.

3.2.2. Findings on Macroeconomic Variable

Inflation has a rather weak correlation in Turkey. Otherwise, there is no relationship in Germany. According to the fixed effects results, inflation has no significant effect on leverage in Germany. Likewise, Turkey has 0.08 significance degree which shows a low correlation. In OLS, there are similar results. While there is no relationship in Germany, Turkey has a low significance and low coefficient. Result of both OLS and fixed effects shows that there is no significant difference between the countries.

Findings show that inflation selected as a macro-economic variable does not have a significant effect, as all firm-specific variables have no significant effect on leverage.

Modern capital structure theories did not concentrate on macro-economic external effects and more concentrated on firm-specific effects. Although these results generally confirm these theories in this respect, the fact that firm-specific variables do not affect leverage too strongly prevents us to make a strong interpretation.

In summary, firm-specific and macro-economic findings for both countries may not have a direct impact on leverage. It is not possible to make a clear conclusion on the retail sector and related companies.

CONCLUSION

Many studies have addressed the issue of capital structure from different aspects. This study tried to demonstrate the capital structure determinant of the retail sector in Germany and Turkey firms and its impact on the country leverage of specific variables.

In light of the findings, it was seen that not all firm-specific effects had a significant effect. Contrary to Hatzinikolaou, Katsimbris, and Noulas (2002), the effect of inflation, the country-specific variable, on leverage is not negative.

These results show us that in Turkey and Germany, particularly, there is a significant difference in the level of tangibility. As stated in the findings section, it may not be correct to explain this directly with theoretical arguments. It may be necessary to consider different factors associated with tangibility.

It is thought that it would be meaningful to focus on tangibility that shows a discrete result and to discuss it. In particular, it is noteworthy that tangibility is effective and this effect has different results in both countries. This result will open doors to different academic studies to discuss it.

We found that there is no clear argument for inflation used as a macro-economic variable in both countries. The use of a macro-economic variable in this study was important for the nature of the study. Generally, it was expected to measure whether it affects as much as firm-specific variables. However, it has been seen that although some of the firm-specific variables express significant results, it is generally not possible to make a clear conclusion for both. Further studies may be able to improve the size of the study using different macro-economic variables.

In general, the results showed us that it is not possible to have a very clear judgment for firm-specific and macro-economic variables. The relevant company data in the relevant years do not give us the conclusion that variables measure the leverage impact strongly. This result leads us to have no clear conclusion on variables with leverage

There was no specific study in Turkish and German retail companies about determinants of capital structure. This study contributed to the literature by using a measurement method. As the study gives a result specifically for retail, it is possible to analyze about different sectors using the same methodology. Different time intervals or different sectors can lead us to different results using the same variables.

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APPENDIX

Table 2. Descriptive Statistics for German Firms

Descriptive statistics shows respectively the firms of the countries. The following table presents a summary statistic of German companies for both variables employed in the study and the financial data used by calculating the variables. The sample is covered the period starting from the years 2007 to 2019 and has 86 observations of the 10 German retail companies.

<i>GERMANY</i>	<i>Mean</i>	<i>Median</i>	<i>Standard Deviation</i>	<i>Minimum</i>	<i>Maximum</i>
Leverage	0,48	0,45	0,23	0,13	0,92
Profitability	0,10	0,12	0,11	-0,38	0,36
Growth	0,13	0,03	0,48	-0,63	3,38
Firm Size (Log Sales)	7,33	6,89	1,97	4,46	11,13
Tangibility	0,49	0,49	0,23	0,09	0,88
Inflation (CPI)	1,35	1,50	0,69	0,31	2,63
Total Debt	4.245,89	233,12	8.528,62	35,48	29.136,00
EBITDA	455,88	132,46	839,02	-114,80	3.137,00
Net Sales	10.444,24	983,50	20.436,54	86,73	67.955,00
Observation	86	86	86	86	86

Table 3. Descriptive Statistics for Turkish Firms

The table presents a summary statistic of Turkish companies for both variables employed in the study and the financial data used by calculating the variables. The sample is covered the period starting from the years 2007 to 2019 and has 84 observations of the 10 Turkish retail companies.

<i>TURKEY</i>	<i>Mean</i>	<i>Median</i>	<i>Standard Deviation</i>	<i>Minimum</i>	<i>Maximum</i>
Leverage	0,69	0,68	0,26	0,16	1,84
Profitability	0,05	0,05	0,04	-0,05	0,16
Growth	0,16	0,15	0,13	-0,21	0,45
Firm Size (Log Sales)	6,52	6,72	1,32	4,30	8,70
Tangibility	0,49	0,48	0,21	0,12	0,92
Inflation (CPI)	9,39	8,57	3,00	6,25	16,33
Total Debt	1.500,36	606,08	2.021,66	21,49	10.249,77
EBITDA	216,48	68,61	333,99	-203,40	1.882,70
Net Sales	4.462,61	2.499,06	5.894,69	158,84	32.322,99
Observation	84	84	84	84	84

Table 4. Detailed Descriptive Statistics of German and Turkish Firms

GERMANY	Leverage	Profitability	Growth	Firm Size (Log Sales)	Tangibility	Inflation (CPI)	Inflation (T2/T1-1)	Total Debt	EBITDA	Net Sales
Mean	0.48	0.10	0.13	7.33	0.49	1.35	0.34	4.245.89	455.88	10.444.24
Standard Error	0.03	0.01	0.05	0.21	0.02	0.07	0.10	919.66	90.47	2.203.73
Median	0.45	0.12	0.03	6.89	0.49	1.50	-0.03	233.12	132.46	983.50
Standard Deviation	0.23	0.11	0.48	1.97	0.23	0.69	0.96	8.528.62	839.02	20.436.54
Sample Variance	0.05	0.01	0.23	3.89	0.05	0.48	0.92	72.737.317.21	703.946.88	417.652.065.76
Kurtosis	-0.97	4.01	28.64	-0.50	-1.08	-1.14	0.22	2.60	4.11	2.78
Skewness	0.30	-0.97	4.95	0.64	0.00	0.04	1.18	2.01	2.30	2.05
Range	0.79	0.73	4.01	6.66	0.79	2.32	3.41	29.100.52	3.251.80	67.868.27
Minimum	0.13	-0.38	-0.63	4.46	0.09	0.31	-0.88	35.48	-114.80	86.73
Maximum	0.92	0.36	3.38	11.13	0.88	2.63	2.53	29.136.00	3.137.00	67.955.00
Sum	41.15	8.75	11.14	630.44	42.51	116.45	29.55	365.146.29	39.205.94	898.204.28
Count	86	86	86	86	86	86	86	86	86	86

TURKEY	Leverage	Profitability	Growth	Firm Size (Log Sales)	Tangibility	Inflation (CPI)	Inflation (T2/T1-1)	Total Debt	EBITDA	Net Sales
Mean	0.69	0.05	0.16	6.52	0.49	9.39	0.11	1.500.36	216.48	4.462.61
Standard Error	0.03	0.00	0.01	0.14	0.02	0.33	0.03	220.58	36.44	643.16
Median	0.68	0.05	0.15	6.72	0.48	8.57	0.18	606.08	68.61	2.499.06
Standard Deviation	0.26	0.04	0.13	1.32	0.21	3.00	0.28	2.021.66	333.99	5.894.69
Sample Variance	0.07	0.00	0.02	1.73	0.04	8.97	0.08	4.087.112.17	111.547.20	34.747.389.51
Kurtosis	5.18	2.60	-0.24	-1.15	-1.24	1.03	-1.38	4.90	8.18	7.02
Skewness	1.42	1.01	-0.09	-0.13	-0.08	1.44	-0.18	2.11	2.57	2.45
Range	1.68	0.21	0.65	4.40	0.79	10.08	0.87	10.228.28	2.086.10	32.164.15
Minimum	0.16	-0.05	-0.21	4.30	0.12	6.25	-0.40	21.49	-203.40	158.84
Maximum	1.84	0.16	0.45	8.70	0.92	16.33	0.47	10.249.77	1.882.70	32.322.99
Sum	57.81	4.03	13.75	547.90	41.34	788.58	9.64	126.030.49	18.184.22	374.859.61
Count	84	84	84	84	84	84	84	84	84	84

Table 5. Correlation Matrix in German Firms

10 German Retail Companies, 2007–2019: 86 Firm-year Observations

GERMANY	<i>Leverage</i>	<i>Profitability</i>	<i>Growth</i>	<i>Firm Size (Log Sales)</i>	<i>Tangibility</i>	<i>Inflation (CPI)</i>
Leverage	1,00					
Profitability	-0,56	1,00				
Growth	-0,01	-0,62	1,00			
Firm Size (Log Sales)	0,68	-0,35	-0,15	1,00		
Tangibility	0,27	0,17	-0,36	-0,20	1,00	
Inflation (CPI)	-0,02	0,15	-0,04	-0,04	0,02	1,00

Table 6. Correlation Matrix in Turkish Firms

10 Turkish Retail Companies, 2006–2019: 84 Firm-year Observations

TURKEY	<i>Leverage</i>	<i>Profitability</i>	<i>Growth</i>	<i>Firm Size (Log Sales)</i>	<i>Tangibility</i>	<i>Inflation (CPI)</i>
Leverage	1,00					
Profitability	-0,03	1,00				
Growth	0,23	0,45	1,00			
Firm Size (Log Sales)	0,48	-0,13	0,20	1,00		
Tangibility	-0,36	-0,19	-0,15	-0,20	1,00	
Inflation (CPI)	0,21	0,20	0,20	-0,04	-0,04	1,00

Table 7. Correlation Matrix for German and Turkish Firms

GERMANY	<i>Leverage</i>	<i>Profitability</i>	<i>Growth</i>	<i>Firm Size (Log Sales)</i>	<i>Tangibility</i>	<i>Inflation (CPI)</i>	<i>Inflation (T2/T1-1)</i>
Leverage	1,00						
Profitability	-0,56	1,00					
Growth	-0,01	-0,62	1,00				
Firm Size (Log Sales)	0,68	-0,35	-0,15	1,00			
Tangibility	0,27	0,17	-0,36	-0,20	1,00		
Inflation (CPI)	-0,02	0,15	-0,04	-0,04	0,02	1,00	
Inflation (T2/T1-1)	-0,03	0,03	-0,05	-0,01	0,01	0,29	1,00

TURKEY	<i>Leverage</i>	<i>Profitability</i>	<i>Growth</i>	<i>Firm Size (Log Sales)</i>	<i>Tangibility</i>	<i>Inflation (CPI)</i>	<i>Inflation (T2/T1-1)</i>
Leverage	1,00						
Profitability	-0,03	1,00					
Growth	0,23	0,45	1,00				
Firm Size (Log Sales)	0,48	-0,13	0,20	1,00			
Tangibility	-0,36	-0,19	-0,15	-0,20	1,00		
Inflation (CPI)	0,21	0,20	0,20	-0,04	-0,04	1,00	
Inflation (T2/T1-1)	0,17	0,05	0,07	0,01	-0,01	0,73	1,00

Table 8. OLS and Fixed Effect Regression Results in Turkish and German Firms

Table 8 presents the value for each variable indicates the coefficient. The value in parenthesis signifies p-values and the stars signify significant p-values for the 10% (*), 5% (**) and 1% (***) level.

<i>Variable</i>	<i>Turkey OLS</i>	<i>Turkey Fixed</i>	<i>Germany OLS</i>	<i>Germany Fixed</i>
Constant Coefficient	0,1731 (0,3315)	1,4815 (0,0038)***	-0,2108 (0,0275)**	1,1353 (0,0000)***
Profitability	-0,9552 (0,2272)	-1,2945 (0,1399)	-0,9775 (0,0000)***	0,0954 (0,6437)
Firm Size (Log Sales)	0,0789 (0,0001)***	-0,0770 (0,2779)	0,0729 (0,0000)***	-0,1259 (0,0001)***
Growth	0,2556 (0,2351)	0,1311 (0,4098)	-0,0119 (0,7768)	0,0079 (0,7973)
Tangibility	-0,3568 (0,0036)***	-0,6948 (0,0389)**	0,4681 (0,0000)***	0,5218 (0,0004)***
Inflation (CPI)	0,0191 (0,0215)**	0,0097 (0,0813)*	-0,0181 (0,3045)	-0,0003 (0,9747)
Adjusted R ²	0,3308	0,7172	0,7783	0,9059
N	84	84	86	86
Year Dummy	No	Yes	No	Yes
Firm Dummy	No	Yes	No	Yes

Table 9. One Regression Model Results with Turkey Dummy

Table 9 presents the value for each variable indicates the coefficient. The value in parenthesis signifies p-values and the stars signify significant p-values for the 10% (*), 5% (**) and 1% (***) level. Variables with Turkey Dummy imply the effect of variables in Turkish firms in comparison to the German firms. If the significance value is between 0% and 10%, it means that the effect of a variable in Turkish firms is different in comparison to the effect of that variable in German firms.

<i>Variable</i>	<i>OLS w_Dummy</i>	<i>OLS w/o_Dum</i>	<i>Fixed</i>
Constant Coefficient	-0,208 (0,1502)	0,0111 (0,9132)	1,3064 (0,0000)***
Profitability	-0,9775 (0,0008)***	-1,2464 (0,0000)***	0,0954 (0,7648)
Firm Size (Log Sales)	0,0729 (0,0000)***	0,0574 (0,0000)***	-0,1259 (0,0064)***
Growth	-0,0119 (0,8549)	-0,0746 (0,1858)	-0,0079 (0,8648)
Tangibility	0,4681 (0,0000)***	0,3867 (0,0000)***	0,5218 (0,0176)**
Inflation (CPI)	-0,0193 (0,0328)	0,0128 (0,6395)	-0,0003 (0,9836)
Turkey Dummy	0,3686 (0,0503)**		
Turkey Dummy*Profitability	0,0222 (0,9741)	0,5641 (0,3691)	-1,3899 (0,0680)*
Turkey Dummy*Firm Size	0,0060 (0,7629)	0,0380 (0,0005)***	0,0489 (0,4978)
Turkey Dummy*Growth	0,2674 (0,1412)	0,2953 (0,1061)	0,1391 (0,2989)
Turkey Dummy*Tangibility	-0,8250 (0,0000)***	-0,6781 (0,0000)***	-1,2167 (0,0005)***
Turkey Dummy*Inflation	0,0010 (0,9702)	0,0099 (0,7211)	0,0101 (0,5862)
Adjusted R ²	0,5988	0,5922	0,8305
N	170	170	170
Year Dummy	No	No	Yes
Firm Dummy	No	No	Yes

Table 10. A Simple Summary About the Effect of the Variables on Total Leverage

Tablo 4.2.3 presents a summary and rough view of Table 8 and 4.2.2 which depicts the relation of variables with the leverage respectively for the countries. In the column of Turkey in contrast with Germany also shows effects of variables of Turkish companies on leverage in contrast to German companies. The stars above signify significant p-values for the 10% (*), 5% (**) and 1% (***) and the arrow signs the direction of relationship with leverage. The table ignores the degree of coefficient value.

Type	Country Variable	Turkey	Germany	Turkey in contrast with Germany
Firm Specific	<i>Profitability</i>	–	–	* ↓
	<i>Firm Size</i>	–	*** ↓	–
	<i>Growth</i>	–	–	–
	<i>Tangibility</i>	** ↓	*** ↑	*** ↓
Macro-economic	<i>Inflation</i>	* ↑	–	–

Table 11. Detailed Formulas of Dependent and Independent Variables

Dependent Variable	Formula
Leverage	Total Debt/Total Assets
Independent Variable	Formulas
Profitability	EBITDA/Net Sales
Growth	$(\text{Net Sales } [t] - \text{Net Sales } [t-1]) - 1$
Firm Size	$\ln(\text{Net Sales})$
Tangibility	$(\text{Total Assets} - \text{Total Current Assets}) - 1$
Turkey Dummy	1 if Turkey, 0 if not
Turkey Dummy*Profitability	Turkey Dummy*Profitability
Turkey Dummy*Growth	Turkey Dummy*Growth
Turkey Dummy*Firm Size	Turkey Dummy*Firm Size
Turkey Dummy*Tangibility	Turkey Dummy*Tangibility
Turkey Dummy*Inflation	Turkey Dummy*Inflation

Table 12. Listed Turkish Companies

Turkey (BIST)	
Code	Company Name
ADESE	ADESE ALIŞVERİŞ MERKEZLERİ TİCARET A.Ş.
BIMAS	BİM BİRLEŞİK MAĞAZALAR A.Ş.
BİZİM	BİZİM TOPTAN SATIŞ MAĞAZALARI A.Ş.
CRFSA	CARREFOURSA CARREFOUR SABANCI TİCARET MERKEZİ A.Ş.
MAVI	MAVİ GİYİM SANAYİ VE TİCARET A.Ş.
MEPET	MEPET METRO PETROL VE TESİSLERİ SANAYİ TİCARET A.Ş.
MGROS	MİGROS TİCARET A.Ş.
SOKM	ŞOK MARKETLER TİCARET A.Ş.
TKNSA	TEKNOSA İÇ VE DIŞ TİCARET A.Ş.
VAKKO	VAKKO TEKSTİL VE HAZIR GİYİM SANAYİ İŞLETMELERİ A.Ş.
MIPAZ	MİLPA TİCARİ VE SİNİİ ÜRÜNLER PAZARLAMA SANAYİ VE TİCARET A.Ş.

Table 13. Listed German Companies

Germany (XETRA)	
Code	Company Name
BIJ	BIJOU BRIGITTE MODISCHE ACCESSOIRES AKTIENGESELLSCHAFT
CEC	CECONOMY AG
FIE	FIELMANN AKTIENGESELLSCHAFT
HFG	HELLOFRESH SE
ECK	LUDWIG BECK AM RATHAUSECK - TEXTILHAUS FELDMEIER AG
B4B	METRO AG
TKK	TAKKT AG
ZAL	ZALANDO SE
GW12	GERRY WEBER INTERNATIONAL AG
HBM	HORNBACH BAUMARKT AG